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MUNICIPAL SERVICES

A SUBSTUDY OF THE REGIONAL OFFICIAL PLAN

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REPORT NUMBER 1

INVENTORY

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH
PLANNING AND DEVELOPMENT DEPARTMENT

JUNE 75

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PLANNING & DEV. DEPT.
MUNICIPAL SERVICES

THE REGIONAL MUNICIPALITY OF

HAMILTON WENTWORTH

July 2, 1975

File No. R-140-G

MEMORANDUM NO. 204

To the Chairman and
members of the Planning
and Development Committee

SUBJECT: Municipal Services Substudy, Inventory - A Substudy of the Regional Official Plan

The first major report of the Municipal Services Substudy, one of the series of substudies of the Regional Official Plan is attached. The report is an inventory of existing Municipal services: sewer, water and solid waste disposal.

Additional population which can be serviced with residual capacity of the existing sewage collection and treatment system has been estimated and shown. Problem areas and servicing related issues have also been identified and draft goals and objectives suggested for your discussion and review.

The feasibility of extending hard services limits Urban Growth physically. However the location and the cost of providing soft services such as schools, hospitals, libraries and property protection etc., must also be analysed before specific areas within the Region are designated for growth.

Residual servicing capacities shown, therefore, should be reviewed in conjunction with other substudies of the Official Plan.

Respectfully submitted,

R. Bailey, M.C.I.P., P.Eng.,
Commissioner of Planning
and Development

MA:sw
Enclosure

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ABBREVIATIONS

MIG	Million Imperial Gallons
MIGD	Million Imperial Gallons per day
IGPD	Imperial Gallons per day

INTRODUCTION

This report is the first stage of the Municipal Services Substudy, which is one of a series of substudies being prepared for the Regional Official Plan. The attached flow diagrams indicate the planned approaches in the preparation of the Municipal Services Substudy and the Regional Official Plan respectively.

The report is basically an inventory of the existing Municipal servicing systems of sewers, water and solid waste disposal. Capital works which are under construction and/or for which firm financial committment has been made by the Regional Municipality are included in the inventory.

Piped trunk sewers and watermains generally have a life of over 50 years which pretty well dictates that their sizing be determined on the basis of long range development forecasts. The sewage and water treatment facilities on the other hand, can be developed in stages provided that the land is available for staged expansion of these facilities.

An attempt has been made to estimate the maximum population allocation which can be supported by the existing and/or potential capacities in the existing servicing systems.

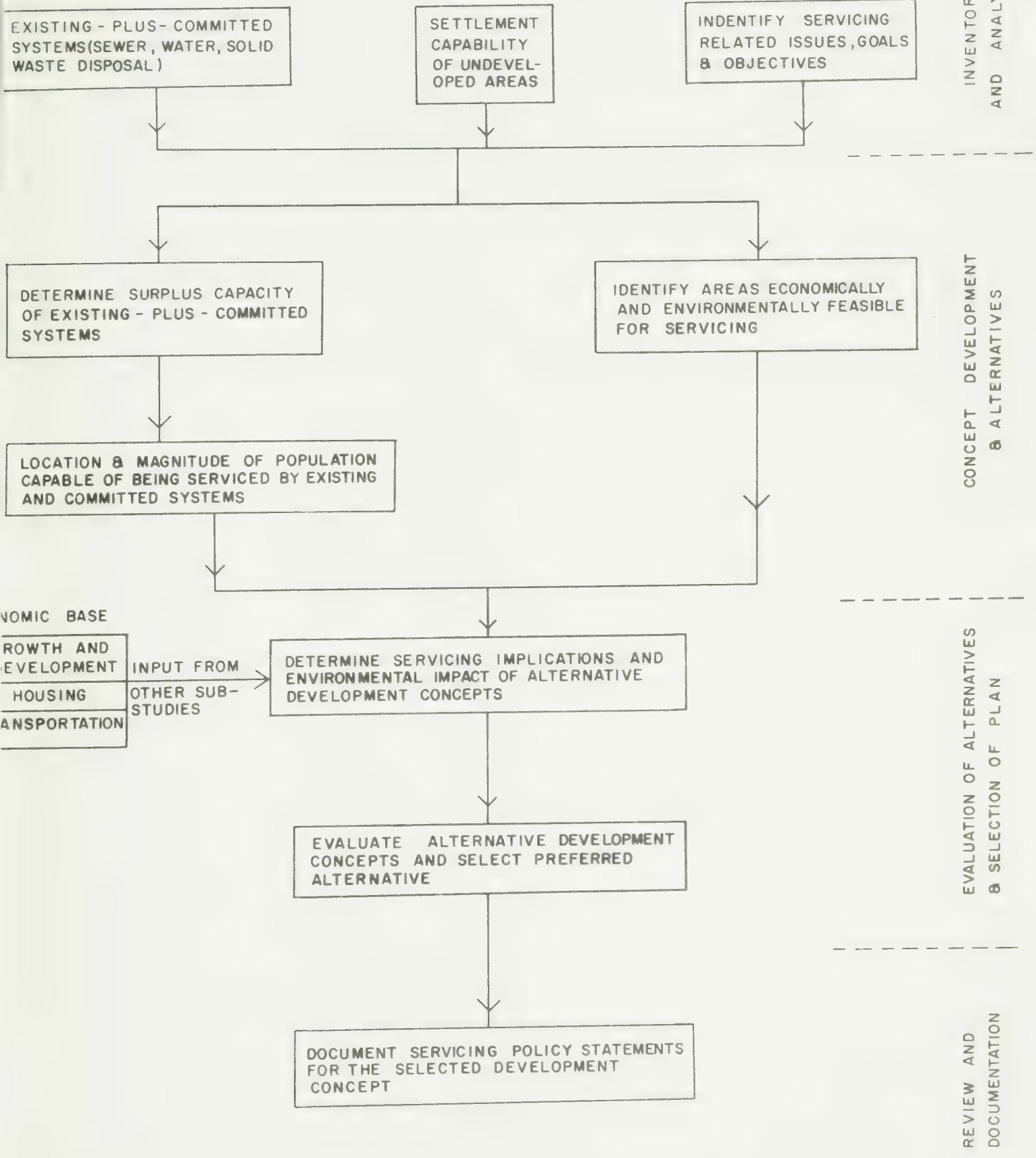
It is estimated that based on normal densities permitted in area municipalities, the remaining capacities in the trunk sanitary sewers would permit doubling of the existing Regional population.

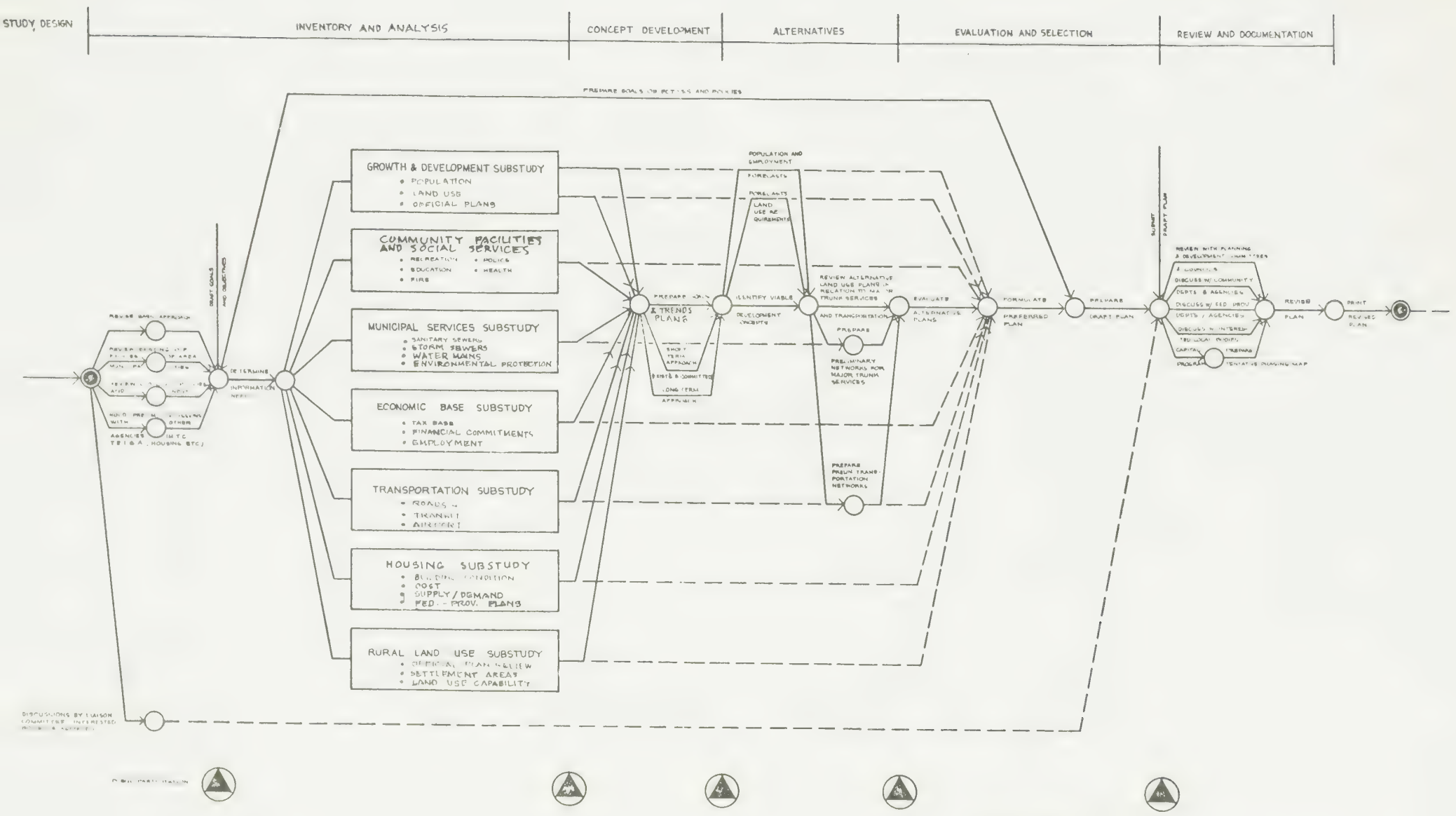
Chapter 1 of this report indicates how the additional population can be allocated based on gravity flow and the capacity of the trunk sewers.

Although the physical capacity of the existing trunk sewers can handle the anticipated Regional growth for a long time to come, the development trends were established by each area municipality independently. The trend development, therefore, may very well represent the most desireable goals of the residents of each municipality viewed from independent jurisdictional boundaries as they existed before 1974. However, before 1974, the structure of the local governments did not provide a vehicle to test the area goals and relate the same to Regional, Provincial and National goals.

The establishment of the Regional Government in 1974 has provided the necessary test vehicle and therefore the trend development will have to be tested against the development goals to be established by the Regional Official Plan.

MUNICIPAL SERVICES SUB-STUDY


EXISTING - PLUS - COMMITTED SYSTEMS (SEWER, WATER, SOLID WASTE DISPOSAL)
SETTLEMENT CAPABILITY OF UNDEVELOPED AREAS
INDENTIFY SERVICING RELATED ISSUES, GOALS & OBJECTIVES
INVENTORY AND ANALYSIS
DETERMINE SURPLUS CAPACITY OF EXISTING - PLUS - COMMITTED SYSTEMS
IDENTIFY AREAS ECONOMICALLY AND ENVIRONMENTALLY FEASIBLE FOR SERVICING
LOCATION & MAGNITUDE OF POPULATION CAPABLE OF BEING SERVICED BY EXISTING AND COMMITTED SYSTEMS
CONCEPT DEVELOPMENT & ALTERNATIVES
NOMIC BASE
ROWTH AND EVELOPMENT
HOUSING
ANSPORTATION
INPUT FROM OTHER SUB-STUDIES
DETERMINE SERVICING IMPLICATIONS AND ENVIRONMENTAL IMPACT OF ALTERNATIVE DEVELOPMENT CONCEPTS
EVALUATE ALTERNATIVE DEVELOPMENT CONCEPTS AND SELECT PREFERRED ALTERNATIVE
EVALUATION OF ALTERNATIVES & SELECTION OF PLAN
DOCUMENT SERVICING POLICY STATEMENTS FOR THE SELECTED DEVELOPMENT CONCEPT
REVIEW AND DOCUMENTATION



NETWORK DIAGRAM FOR
THE PREPARATION OF AN OFFICIAL PLAN
THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

SUMMARY OF FINDINGS: Issues, Goals and Objectives

A. Summary of Findings

1. Sewage Collection and Disposal

(i) Sanitary

Approximately 84% of the Regional population utilizes the three existing municipal sewage collection and treatment systems. The existing pollution control plants have a normal capacity of 60.0 MIGD, 2.0 MIGD and 0.3 MIGD and are respectively located in Hamilton, Dundas and Flamborough.

The plant in Dundas serves a population of approximately 14,000 and the plant is loaded to capacity. The expansion of the plant to double the capacity is in the design stage. The expanded plant, when completed can serve an additional population of approximately 20,000 in the Spencer Creek Watershed. The Spencer Creek Watershed encompasses the entire Town of Dundas, part of the Town of Ancaster and a large area in the Township of Flamborough.

The pollution control plant located in Flamborough serves a population of approximately 3,100 in Flamborough and like the plant in Dundas, is also loaded to capacity. Because of site restrictions and the limitation of Grindstone Creek to which the effluent is discharged, this plant can be expanded to a maximum of twice the existing capacity. The expanded plant can serve a maximum of 3,000 additional population.

The pollution control plant located in Hamilton, is the largest of the three and serves a population of approximately 320,000 in the City of Hamilton, Town of Stoney Creek and Town of Ancaster. The present plant capacity is 60 MIGD which can be doubled on the existing site. The trunk sewers in this system (Woodward Avenue System) are sized to accommodate the full development within the entire Red Hill Creek, Stoney Creek, Chedoke, and Saltfleet Lowlands Watersheds.

It is estimated that a fully expanded pollution control plant at Woodward Avenue can permit the additional development of approximately 21,400 acres providing for doubling of the existing Regional population.

The remaining 16% Regional population rely on other methods of waste water disposal such as septic tanks and lagoons.

(ii) Storm

Studies carried out by the Hamilton Region Conservation Authority indicate that a Regional storm would cause flooding of the lower reaches in the Towns of Dundas, Stoney Creek, Ancaster and the City of Hamilton. The flood lines are shown on map #5.

2. Water Supply, Distribution and Fire Protection

Both ground water as well as lake water are used as sources of Municipal water supply in this Region. Ninety percent of the Regional Population is served by either one of the three Municipal water supply systems.

Woodward Avenue system is the largest of the three and is lake based. It supplies water to; the City of Hamilton, part of the Town of Stoney Creek, Town of Dundas and a small section in the Town of Ancaster. The system's purification plant is located in Hamilton and the existing nominal capacity at the plant is 160 MGD. This capacity is adequate to serve an ultimate population of 500,000. The remaining two (2) systems respectively serve the urban population in Ancaster and Flamborough (former village of Waterdown).

The system in Ancaster draws its supply entirely from ground wells and serves an existing population of approximately 10,000. The existing studies indicate that an expanded Ancaster system can serve a maximum population of 16,000. The third system serves a population of 4,450 in Flamborough. Approximately 42% of the supply needs in this system are purchased from the Regional Municipality of Halton. The remaining 58% is drawn from ground wells. It is estimated that the supply from wells and the maximum supply from Halton can serve an ultimate population of 5,000.

The remaining 10% of the Regional population is on individual and/or communal wells designed to serve only specific needs.

The storage capacities provided in the Woodward Avenue and Flamborough systems are adequate and meet the fire protection standards of the Canadian Underwriters Association. Storage capacity in Ancaster's system is slightly below the afore-noted standards.

3. Solid Waste Disposal

Approximately 600,000 tons of solid wastes are generated yearly which need to be disposed of in the Regional facilities. The existing Regional disposal facilities include 210,000 tons capacity incinerator, and 8 land-fill sites with total acreage of approximately 233 Acres. Five sites are recommended to be closed in 1975, one in 1976 and the two larger ones in Ancaster (50A) and Hamilton (140A), respectively, are desired to be closed in 1977.

The incinerator which has recently been completed is running below its capacity due to technical difficulties.

There is a need of establishing new landfill site/s together with stream lining of the waste management system. The matter has been the subject of a special study by consulting Engineers since 1972. The findings of Proctor & Redfern Limited have recently been completed and are before the general public for comments.

B. Issues - Related to Servicing

The following servicing related issues have been identified during the preparation of the inventory.

1. Pollution

Settlements listed below have sanitary pollution problems and/or inadequate supply of water (refer to map #5).

(i)	Winona	Stoney Creek
(ii)	Mount Hope	Glanford
(iii)	Jerseyville	Ancaster
(iv)	Lynden	Ancaster
(v)	Greensville	Flamborough
(vi)	Millgrove	Flamborough
(vii)	Sherwin Ct. Survey	Flamborough
(viii)	McCormick Park Survey	Dundas
(ix)	Pleasant View Survey	Dundas

2. Receiving Bodies of Water with Limitations

(i) Desjardins Canal & Cootes Paradise

Much public concern has been shown on the proposed expansion of the sewage treatment plant in Dundas. Those who are opposed are concerned that the increased volume of effluents will further deteriorate the quality of water in the Desjardins Canal and Cootes Paradise. The Ontario Ministry of the Environment is conducting a study and the findings and recommendations of this study, hopefully, would resolve this issue.

(ii) Grindstone Creek

Grindstone Creek is the receiving body for the effluent from sewage treatment plant in Flamborough. The Ministry of the Environment has established that the receiving capacity of the Creek is fully utilized at design sewage flows of 0.3 MIGD. With refined treatment the ultimate receiving capacity is established at 0.6 MIGD.

3. Agricultural Land (Fruit Belt)

The design catchment area for sanitary trunk sewers includes Saltfleet Lowland watershed in Stoney Creek. The aforementioned watershed refers to the area of Stoney Creek below the escarpment, which falls within the limits of unique agricultural land or fruit belt.

The upper end of the existing trunk sanitary sewer is at Dewit Road and is proposed to be extended to Fruitland Road in order that development can proceed easterly and northerly in Stoney Creek, below the escarpment. Further extension easterly of this trunk sewer is under review, in order to solve pollution problems in Winona. The easterly extension of the trunk sewer can open the entire Fruit Belt for development which will be contrary to the desired goals of the Province. It therefore follows that before the development goals are established for this region with full public participation, any decision to solve a problem of local nature which has extended implications is questionable.

C. Goals & Objectives

In light of the information obtained for the inventory and the servicing related issues which have been identified, the following Goals and Objectives are suggested. It is to be recognized, however, that goals suggested herein are preliminary only. The final goals will be established on the basis of the findings of all the substudies including Economic Base, Settlement Capability, Transportation and Housing Substudies with full public participation.

1. In the planning and feasibility studies of future servicing programmes, existing settlements with known pollution and water supply problems should be given priority for servicing.

2. Capital projects which may have implications of conflict with the provincial goals should be reviewed. The construction of these projects should be delayed until the Regional development goals and population allocations are defined by the Regional Official Plan.

3. The implementation of those programmes be delayed which may have either direct or indirect implications of development on unique Agricultural lands worthy of preservation.

4. To off-set the effects of (2) and (3) on the supply of serviced land, servicing programmes should be accelerated in those areas where there are no environmental impacts.

5. New sanitary land fill sites be established as soon as possible, based on the investigations carried out for the waste management study.

CHAPTER I

Municipal Sewage Collection and Disposal

A. Sanitary Sewage

General

Of the 401,000 residents of the Regional Municipality of Hamilton-Wentworth approximately 337,300 utilize the three municipal collection and treatment facilities for disposal of their waste waters as listed in Table No. 1.

Table 1

Existing Sewage Treatment Plants and Their Capacities

Location of the sewage treatment plant	Existing Capacity MIGD	Municipality and Population served	Treatment provided	Effluent Receiver
Woodward Av. Hamilton	60	Hamilton 300,000 Stoney Crk. 10,100 Ancaster* 10,000	Secondary	Hamilton Harbour
King St. Dundas	2	Dundas 14,100	Secondary	Desjardin Canal
Waterdown Flamborough	0.3	Flamborough 3,100	Secondary	Grindstone Creek

Total existing population served 337,300

* Sewers in Ancaster are under construction.

1. Woodward Avenue System

The Woodward Avenue system is designed to serve full development within the Chedoke, Red Hill, Stoney Creek, and Saltfleet Lowland Watersheds. Trunk sewers capable of servicing these watersheds are generally existing up to the edge of the existing built up areas.

The system is based on three main trunks, one running east along the Queen Elizabeth Way, one running west through the north end of Hamilton and the third one extending southerly through the Red Hill Creek Valley. The routes of these main trunks and the design catchment areas are shown on map #3.

It is to be pointed out that the trunk sewers which will receive sewage flows from Ancaster have a limitation for maximum flows of up to 24 c.f.s., which is equivalent to a population of 45,000.

The undeveloped lands within the design catchment area can be serviced by the extension of the trunk sewers and the staged expansion of the treatment plant at Woodward Avenue.

The flow into the plant is nearing capacity and plant expansion programme is to commence in 1975. The staging of the plant is under review and the ultimate capacity to which the plant can be expanded on this site is 120 MIGD.

The total undeveloped acreage within the design catchment area is approximately 21,400 Acres, for which the total residual capacity population is estimated to be 407,000.

The above-noted capacity population is based on the assumed densities normally permitted by the Area Municipalities and the acreage for residential development is calculated after making an allowance of 3,800 Acres for Industrial Development.

Table #2 and map #3 show a breakdown of the residual residential Acreage and Capacity populations, for which additional capacity is available in the existing trunk sewers.

Table #2

Developable Residential Areas and Estimated Additional Population For which Capacity is Available in the Existing Trunk Sewers

Municipality	Residential Area (Acres)	Assumed Density* (persons per acre)	Estimated Additional Population Capacity
Hamilton	4,000	35	140,000
Stoney Creek (including Saltfleet Community Development)	10,600	20	212,000
Glanbrook	1,000	20	20,000
Ancaster	2,000		35,000
TOTAL	17,600	- -	407,000

*Assumed Densities derived from local official plans where applicable.

2. King Street System

The King Street system is based on a treatment plant located at King Street in Dundas. The existing plant capacity is 2.0 MIGD which serves a population of 14,100, all within the boundaries of the Town of Dundas. The flow through the plant is at capacity and an expansion of the plant to double its capacity is in the design stage.

It is expected that the proposed expansion, when complete, will

a) eliminate the existing overloading and the accompanying environmental effects.

b) allow for additional development within the Town of Dundas and within the Spencer Creek watershed.

The expansion will allow to serve an additional population of approximately 20,000.

3. Waterdown System

The existing treatment plant in Waterdown has a capacity of 0.3 MIGD and it serves an existing and committed population of approximately 3,100 within the Township of Flamborough. The plant is loaded to capacity.

The effluents are discharged into the Grindstone Creek, the flows in which have limitations. It is estimated that the flows in the creek can permit expansion at this site of only up to 0.6 MIGD.

The expansion of the plant to 0.6 MIGD capacity is under study and if expanded a maximum population of 6,000 can be served by this plant.

B. Storm Drainage

Unlike Sanitary sewers and water, the land drainage within the Region falls under a number of jurisdictions as given below:

Description	Jurisdiction
a) Storm drainage for the City of Hamilton and drainage of Regional Roads	Regional Municipality

	Description	Jurisdiction
b)	Storm drainage within area municipalities other than (a)	Area Municipalities
c)	Flood Control	Regional Conservation Authorities

Within the Regional boundaries, four (4) Conservation Authorities have jurisdiction on flood control. The bulk of the Region comes under the jurisdiction of Hamilton Regional Conservation Authority which is responsible for the watersheds listed below and as shown on map #1.

i) Spencer Creek Watershed

ii) Chedoke Creek Watershed

iii) Red Hill Creek Watershed

iv) Stoney Creek Watershed

v) Saltfleet Lowlands Watershed

The Grindstone Creek and Bronte Creek Watersheds in Flamborough are under the control of the Halton Region Conservation Authority. The Fairchild Creek and Big Creek Watersheds are under Grand River Conservation Authority, whereas Welland River, Twenty Mile Creek and Forty Mile Creek Watersheds are under the jurisdiction of Niagara Conservation Authority.

Flood lines for Regional storm (Hurricane Hazel type) are shown on map #5 for Spencer Creek, Red Hill Creek, Stoney Creek and Saltfleet Lowland Watersheds.

The shaded areas along the water courses identify those lands which will be flooded as a result of full development of the contributory watershed during a Regional storm.

The Regional storm is defined as a 1 in 100 year storm with a rainfall intensity of app. 8.31 inches in a 12 hour period.

CHAPTER II

Municipal Water Supply, Distribution and Fire Protection

General

90% of the existing population in the Regional Municipality is served by Municipal water. Of the three existing water supply systems, the Woodward Avenue water supply system in Hamilton is the largest one and it draws its water supply from Lake Ontario. The Ancaster water supply system draws its water entirely from ground wells, whereas the Waterdown water supply system draws water from ground wells and the supply is augmented by purchase of water from the neighbouring Region of Halton.

The boundaries of the areas served by the Municipal water supply systems are shown on Map #2. The existing population outside of the aforenoted boundaries, is served by Communal and/or individual wells designed to service only specific locations.

The following description is provided for each of the Municipal water supply system and a comparative summary is provided in table No. 3.

1. Woodward Avenue Water Supply System

The Woodward Avenue water treatment and distribution system serves the City of Hamilton, most of the Town of Dundas, a small section of the Town of Ancaster abutting the west limits of the City of Hamilton below the escarpment, and the following areas of the Town of Stoney Creek.

i) all of the Town of Stoney Creek below the escarpment, except one small section near the Grimsby boundary.

ii) Committed development in Sattelite City.

In addition, the Woodward Avenue system supplies water to the Mount Hope Airport in Glanbrook Township.

The area served, together with the main components of the Woodward Avenue water supply and distribution system are shown on map #4.

The nominal capacity of the existing water works at Woodward Avenue is 160 MIGD, which can serve an ultimate population of 500,000.

The plant can be expanded to an ultimate capacity of 300 MIGD at this site. A plant capacity of 300 MIGD is considered to be adequate to serve a population of 1,000,000.

Existing Water Works Systems and Their Capacities

Source within the Regional boundaries	Nominal Capacity	Water Treatment	Municipality & pop. served	Storage
Lake Ontario (Woodward Ave. system)	160 MIGD	Complete	Hamilton 309,300	2.0 MIG Ground storage at Waterworks 162.5 MIG Ground storage
			Dundas 17,600	1.000 MIG Ground 0.625 MIG Elevated
			Stoney Creek 22,300	9.25 MIG Ground
			Ancaster (34 services - 136	
Ground wells (Ancaster system)	8 wells 1.728 MIGD	None	Ancaster (urban area only) 10,234	0.958 MIG Elevated
Ground wells (Waterdown system)	8 wells 0.370 MIGD	None	Flamborough (Waterdown area) 4,450	0.525 MIG Ground 0.500 MIG Elevated
TOTAL population served -			364,020	

Water Purchased Under Agreement from Neighbouring Municipalities

Source	Max. supply	Municipality served	% of total Consumption	Agreement Expires
Grimsby (Niagara Region)	8" dia. watermain	Stoney Creek (easterly section below the escarpment	8	January, 1977
Burlington (Halton region)	10" dia. watermain (0.5 MIGD	Flamborough (Waterdown area)	42	March, 1992

Storage (Woodward Avenue System)

Water storage is provided to meet peak, emergency and Fire demands and to provide adequate pressures in the distribution system. The accepted practice to estimate storage requirements for fire demands is that which is contained in the recommendations of the Canadian Underwriter's Association.

Although there are some minor pressure deficiencies within the system, Woodward Avenue Water distribution system provides adequate pressures and storage for fire protection.

2. Ancaster Water Works System

The Ancaster Waterworks system serves the existing urban area in the Town of Ancaster. The boundaries of the area served by this system are shown on Map #2. Map #4 shows the main components of the water supply and distribution network.

The Ancaster water works system draws water entirely from an overburden aquifer of sand and gravel. The aquifer is confined to a bedrock valley near the edge of the escarpment to the north-west of the existing urban area.

A total of 8 wells have been developed with a total yield of 1.728 MIGD. The supply is reliable and the quality of water is quite satisfactory.

Although the present wells system is adequately serving the existing urban population in Ancaster, the exact limitations of the aquifer source are not known. Reliable estimates can only be made by field tests for the development of additional wells.

It is estimated, however, that the expanded Ancaster waterworks system can serve an ultimate population of approximately 16,000.

The existing storage capacities of 0.958 MIG in this system are below the acceptable standards for fire protection.

3. Waterdown Water Works System

The Waterdown Waterworks system serves the area in and adjacent to the former village of Waterdown in Flamborough Township. This system draws water from ground wells and the total yield of the existing 8 wells is 0.370 MIGD. In 1974 this yield accounted for 58% of the consumption needs within this system. The remaining 42% was purchased from the Regional Municipality of Halton, under an agreement.

Under the terms of the afore-noted agreement, the maximum daily supply which can be delivered to the Watersown Waterworks system from Halton Region is 0.5 MIGD. The supply is via a 10" diameter water pipe.

The existing well-field system is confronted by aquifer restrictions. Based on the maximum yield from present wells and the optimum supply arrangements with Halton it is estimated that the existing waterworks system can service an ultimate population of 5,000 within the former village boundary.

The Waterdown Waterworks system provides for a rural demand of up to 50,000 IGPD.

The existing and committed storage capacity is adequate to meet the fire protection standards of the Canadian underwriters Association.

The boundaries of the area served by Waterdown Waterworks system are shown on the attached map #2.

CHAPTER III

Solid Waste Disposal

The jurisdiction over solid wastes is divided between the Region and the area Municipalities. Only the disposal of solid wastes is the responsibility of the Region and the area Municipalities are responsible for collection of solid wastes and haulage of the same to designated disposal sites.

Manufacturing industries and others who do not receive collection service from Municipalities transport their wastes to the Municipal disposal sites under private arrangement.

Generation and Volumes of solid wastes

A survey was conducted in 1972 to establish the Generation Factors and it was estimated that the following average amounts of wastes were generated weekly.

Residential	12 lbs/per Capita
Non-Residential	
Manufacturing	120 lbs. per employee
Retail	20 lbs. "
Service	40 lbs. "
Other	60 lbs. "
Average Non-Residential	100 lbs. per employee

Based on these Generation Factors and after allowing for moderate per Capita/employee annual increases, it is estimated that approximately 600,000 tons of solid wastes are generated yearly which need to be disposed of in the Regional facilities.

It should be pointed out that the afore-noted total of 600,000 tons does not include approximately an equal amount of additional solid wastes generated yearly, such as Construction Debris, etc., which can be disposed of as clean fill material and whose disposal is free of any environmental risks.

A breakdown of the estimated wastes generated by each Municipality is given in Table #4.

Table NO. 4

Solid Waste Estimates and the Requirement for Regional Disposal Facilities

Area Municipality	Total Wastes (tons)	Construction Debris, etc. (tons)	Amount of waste to be disposed of in the Regional facilities (tons)
Hamilton	990,043	418,495	571,548
Stoney Creek	84,666	46,969	37,697
Flamborough	56,587	34,542	22,045
Dundas	45,320	25,096	20,224
Ancaster	42,686	27,579	15,107
Glanbrook	25,557	15,460	10,097
TOTAL	1,244,859	568,141	676,718

Solid Wastes Disposal Systems

Two types of Regional Disposal Systems are presently in operation, namely:

a) Incineration, and

b) Sanitary Landfill.

These facilities were developed by the area municipalities and were transferred to the Region, in 1974, when the local Governments were restructured in this area. The location of the disposal facilities are shown on map #6. The following is a brief description of each system.

a) Incineration

The incineration plant known as SWARU has recently been completed and is located on Highway #20 in the City of Hamilton.

The system at SWARU is based on the principle of energy recovery by production of steam through the use of heat produced. The system also incorporates the magnetic separation of metallic materials. Glass passes through the system and is recoverable from the ash.

Although SWARU is in operation, it is running below its capacity because of technical difficulties. The total design capacity of the system is 210,000 tons per year.

b) Sanitary Landfill sites

The existing sanitary landfill sites are shown on map #6. The size of these sites and the estimated remaining landfill capacity of each site is given in Table #5.

After the enactment of the Environmental Protection Act in 1971, a waste management study was commissioned for the former County of Wentworth. The Consulting Engineering firm of Proctor and Redfern was retained in 1972, to study the existing disposal systems and prepare recommendations for an efficient waste management system.

The findings and draft recommendations of the Consulting Engineers are contained in the reports listed under item #17 in the list of References. The findings of the waste management study are based on a 20 yr. need of Regional disposal systems and the draft recommendations are before the general public for comments.

The investigations carried out for the waste management study suggest that because of unsatisfactory geological and hydrological conditions, the following existing sanitary landfill sites be closed.

i) Township of Flamborough (2)

ii) Township of Glanbrook (2)

iii) Town of Stoney Creek

Table No. 5

Sanitary Landfill Sites and their Recommended closure dates

Site No.	Location	Area (Acres)	* Desireable Closure date
1	Stoney Creek	10	1975
2	Glanbrook	1	1975
3	"	3	1975
4	Hamilton	140	1977
5	Dundas	23	1975
6	Ancaster	50	1977
7	Flamborough	1	1975
8	"	5	1976

* Desireable closure date is based on the size of the site and Geological and Hydrological considerations.

CHAPTER IV

Problem Areas and Servicing Related Issues

A. Settlements with Sanitary Pollution problems and/or inadequate water supply

Hamlets, Estate and other residential developments, in the rural areas, are generally served by private, individual and/or Communal ground wells and septic tanks with the following exceptions in the Town of Stoney Creek. As indicated earlier, the rural area below the escarpment in the Town of Stoney Creek, is serviced with municipal piped water (except small sections of the area along the lake shore).

A lagoon serves the Gardendale area between Lewis Rd. and Winona Rd. south of Highway #8.

A variety of surface and subsurface conditions related to depth and type of overburden, rock formation, stream locations, etc. are known to exist in the rural areas, which effect the availability and quality of ground water supply and the functioning of septic tanks.

Based on the investigations carried out in the past, by the Ministry of the Environment, and the former Ontario Water Resources Commission, the following problem areas have been identified. The locations of the problem areas are shown on map #5.

It is to be recognized that although certain other areas may also have isolated servicing related problems, only those areas have been listed below where the chemical and Bacteriological analysis of water samples indicated that more than 50% of the samples obtained were contaminated adversely. Additional specific problems, if any, are discussed under each item.

1. Winona Area

The problem in Winona area is sanitary pollution due to:

a) malfunctioning of private septic tanks and

b) the Gardendale Communal Lagoon.
Absence of an ideal receiving watercourse, nearby, poses serious limitations on the satisfactory discharge of effluent from the latter, thereby causing pollution and odour problems.

The Ministry of the Environment had concluded, in 1972, that a proper sanitary sewer system was needed as a permanent solution. The original proposal was to build sanitary sewers in the built-up area with a separate pollution control plant located east of Fifty Rd. and north of Q.E.W. The recommended proposal called for a two stage construction of the pollution control plant with ultimate capacity of app. 1,000,000 IGPD to serve a fully developed section of the Town of Stoney Creek, between east of Glover Rd. to the easterly Town limits below the escarpment.

After the restructuring of the local Governments in 1974, the Regional Engineering Department reviewed the ministry's proposal and concluded that it was advantageous to direct the flow to the Woodward Avenue pollution control plant than to build a separate plant. This requires the construction of a trunk sanitary sewer from Winona to the existing trunk sanitary sewer at Dewitt Rd. The proposal is in the hands of the Ministry of the Environment officials for detail study and a financial report is expected soon.

2. Mount Hope

The Hamlet of Mount Hope in the Township of Glanford has a population of approximately 1,000. The majority of water supplies are from individual drilled wells most of which range from 90 to 150 feet in depth, and terminate in the limestone formation. The yield from wells vary from property to property; some have adequate amounts for domestic use, others do not. A number of residents supplement their supplies with rainwater from Cisterns or have water hauled in.

A survey conducted in 1966 indicated that 16.5% of the wells sampled showed bacteriological contamination. The water from wells is generally hard and 50% of the wells are reported to impart sulphurous taste and odour.

The disposal of domestic wastes in the hamlet is done by means of individual septic tanks. Heavy clay soil conditions limit the effectiveness of such systems. The 1966 laboratory tests showed that the domestic sewage, in some cases, was being discharged to the municipal storm drains and subsequently into the nearby water courses. However, the volume of waste water encountered was minimal which may be attributed to the limited supply of water. The problems with septic tanks could become further aggravated, if ample supply of water is made available to the community.

Summary and Conclusion:

There is a shortage of water in the hamlet of Mount Hope. This, in conjunction with unsuitable chemical and bacteriological quality indicates the need for a municipal water supply system.

Town of Ancaster

3. Jerseyville:

A recent survey (1974) indicates that the domestic sewage is discharged into the water courses from malfunctioning septic tanks. It was concluded, however, that the situation does not warrant the construction of sanitary sewers.

Summary and Conclusion:

The pollution problems in Jerseyville should be attended on individual basis.

4. Lynden:

A pollution survey for Lynden was carried out in 1969 and was followed up by another survey in 1974.

Both surveys confirm that a significant level of pollution exists in the storm water drainage system. It is concluded that the correction of malfunctioning septic tanks would be difficult due to small lot sizes.

Summary and Conclusions:

Installation of sanitary sewers appears to be the only permanent solution of the problem. Aquarobic system may offer a partial solution for some lots.

Township of Flamborough and Town of Dundas

A sanitary pollution survey was conducted in 1969 covering 11 settlements located in the Township of Flamborough and the Town of Dundas. Chemical and Bacteriological tests were carried out on water samples obtained. The settlements defined as environmental problem areas and listed on map #5 are those where laboratory tests showed 50% or more samples being contaminated.

Township of Flamborough

f. # ap 5)	Settlement	Source of water supply	Depth Range ft.	Availa-bility of Potable ground water	Percent of samples con-taminated (%)
5	Greens-ville	drilled well dug well spring	20 - 60 12 - 23 - -	Good	50
6	Sherwin Ct. survey	drilled well	40 - 85	Fair	70
7	Millgrove	drilled well dug well	60 -100 15 - 20	Fair	88
		Town of Dundas			
8	McCormick Park Survey	drilled well dug well	40 - 55 10 - 15	Fair	50
9	Pleasant View Survey	dug well trucked in (Cistern)	- - -	Poor	100

Summary and Conclusion:

The Communities listed above, should be given priority in the future planning of municipal services.

B. Receiving Bodies of water with Physical Limitations (map #5)

10. Grindstone Creek

This creek receives treated effluent from the sewage treatment plant located in the Township of Flamborough. The afore-noted plant has a design capacity of 0.3 MIGD.

The Ministry of the Environment has established that the receiving capacity of the Grindstone Creek will be fully utilized when sewage flows reach design levels of the plant.

With more refined treatment, the plant could be expanded to 0.6 MIGD. However, the limitations of the stream would not permit expansion of the plant beyond 0.6 MIGD capacity.

11. Cootes Paradise and Desjardins Canal

The effluent from the sewage treatment plant at King St. in Dundas is presently discharged into the Desjardins Canal. The Desjardins Canal is an abandoned shipping Canal which was dredged through the marsh area to connect the Town of Dundas to the Hamilton Harbour.

The water is relatively stagnant in the upper end of the Canal where the effluent is discharged. A survey of the area by the Ministry of the Environment indicated that:

1. Water quality in the Desjardins Canal is extremely poor and the impaired water demonstrated consistently unacceptable BOD, suspended solids, coliform organism levels and excessively high levels of major nutrients, nitrogen and Phosphorous.

2. Obnoxious odours originate from the upper portion of the canal extending several hundred yards along the canal from the effluent pipe.

3. Extensive algae blooms are a common summer occurance in the canal extending several hundred yards along the canal from the effluent pipe.

4. Small suspended sludge mats and escaping gas bubbles from bottom decomposition were noted along the entire Desjardins Canal and in the open waters between the canal and Cootes Paradise.

The flows through the existing Sewage Treatment Plant are up to capacity (2.0 MIGD) and the plant is intended to be expanded to 4.0 MIGD capacity.

Because of the above-noted conditions in Desjardins Canal, considerable concern has been shown by citizen groups on the proposed expansion. The Ministry of the Environment has been requested to conduct a study and it is hoped that the findings and recommendation of this study would determine:

a) feasible method to relocate the effluent discharge location

b) receiving capacity of Coote's Paradise

The findings of this study would in turn establish the ultimate size of the plant with effluent discharge into Coote's Paradise.

APPENDIX

REFERENCES

(1) Agreement dated October 4, 1973, between the Ontario Ministry of Environment and the Town of Ancaster (formerly Township of Ancaster) for the provision of sewage service in Ancaster.
(Schedule A to By-law No. 71-2398 of the corporation of the Township of Ancaster).

(2) Agreement dated February 7, 1972, between the corporation of the village of Waterdown and the Public Utilities Commission of the Town of Burlington for the supply of water.

(3) COLUC Task Force Report 1974

Hamilton Region Conservation Authority

(4) Flood & Erosion Control 1970
Town of Stoney Creek
FENCO Consulting Engineers

(5) Stoney Creek Flood Mapping 1973
FENCO Consulting Engineers

(6) Preliminary Engineering Study 1974
Ancaster Creek - Project No. 8
Flooding & Erosion Control Problems
FENCO Consulting Engineers

(7) Lower Spencer Creek 1974
Flood line mapping
FENCO Consulting Engineers

(8) Flood Plan Study 1974
Town of Stoney Creek Water Courses
M.M. Dillon Limited
Consulting Engineers and Planners

(9) Ontario Housing Corporation (O.H.C.) 1969
Saltfleet Community Development
Planning Policy

Ontario Ministry of the Environment

(10) Water Pollution Survey of the 1966
Hamlet of Mount Hope
Township of Glanford (O.W.R.C.)

(11) Water Pollution Survey of the Township of Saltfleet (O.W.R.C.) 1967

(12) Water Pollution Survey of the Township of West Flamborough County of Wentworth (O.W.R.C.) 1969

(13) Water Pollution Survey of the Police Village of Lynden (O.W.R.C.) 1969

(14) Design Report On Provincial Sewage Works Programme
No. 1-0262-71
Township of Saltfleet (Winona Area)
W.L. Sears & Associates Limited
Consulting Professional Engineers 1972

(15) Hamilton-Wentworth
Water Supply and Pollution Control
Study - 2 Volumes 1972

Regional Municipality of Hamilton-Wentworth

(16) Report on Uniform Policies & By-laws related to water and sewage facilities, and the establishment of rates and charges for these facilities
Volume 1 - Water 1974
Volume 2 - Sewage 1975
Proctor & Redfern Limited
Consulting Engineers

(17) Hamilton-Wentworth 1972 to 1975
Waste Management Study
Interim Reports 1 to 6
Proctor and Redfern Limited
Consulting Engineers

(18) Township of Saltfleet 1970
Urban Roads and Services
Programming Study
1970-1980

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

EXISTING BUILT UP AREAS

NAME — NAME OF THE WATERSHED, AND DIRECTION OF FLOW

DRAINAGE BOUNDARIES

Scale: 0 2 3 4 5 KM / 0 2 3 4 MILES

DATE: MAY 1975

MAJOR DRAINAGE BOUNDARIES

Map No 1

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

SEWER SERVICE AREAS

WATER SERVICE AREAS

PIPED WATER AREA (LAKE BASED)

GROUND WELLS

LAKE BASED AND GROUND WELLS

HAMLETS (POP. OVER 500) GROUND WELLS AND SEPTIC TANKS

EXISTING BUILT UP AREAS

Scale: 1 0 1 2 3 4 5 KM / 0 1 2 3 4 Miles

DATE: MAY 1975

MUNICIPAL SEWER AND WATER SERVICE AREAS

Map No. 2

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

RESIDENTIAL
INDUSTRIAL
POP CAPACITY

DEVELOPABLE AREAS (ACRES) & THEIR POPULATION CAPACITIES

POLLUTION CONTROL PLANT

TRUNK SEWERS (27" dia. to 102" dia.)

LIMITS OF DESIGN CATCHMENT AREAS (WOODWARD AVE. SYSTEM)

EXISTING BUILT UP AREAS

Scale: 1 0 1 2 3 4 5KM.
0 1 2 3 4 Miles

DATE: MAY 1975

EXISTING TRUNK SEWERS

Map No 3

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

- PUMPING STATION
- ELEVATED TANK
- RESERVOIR
- GROUND WELLS
- TRUNK WATERMAINS (12" dia. to 90" dia.)
- EXISTING BUILT UP AREAS

Scale: 1 0 1 2 3 4 5 KM.
0 1 2 3 4 Miles

DATE: MAY 1975

EXISTING WATER SUPPLY AND DISTRIBUTION SYSTEM

Map No 4

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

- SETTLEMENTS WITH SANITARY POLLUTION PROBLEMS AND/OR INADEQUATE WATER SUPPLY
- RECEIVING BODIES OF WATER WITH PHYSICAL LIMITATIONS
- FLOOD PLAINS
- EXISTING BUILT UP AREAS

Scale: 0 1 2 3 4 5 KM / 0 1 2 3 4 Miles

DATE: MAY 1975

ENVIRONMENTAL PROBLEM AREAS

Map No 5

THE REGIONAL MUNICIPALITY OF HAMILTON - WENTWORTH

Regional Planning & Development Department

LEGEND

- EXISTING BUILT UP AREAS
- MUNICIPAL DISPOSAL SITES
- INCINERATOR
- MUNICIPAL BOUNDARIES

SCALE: 1 0 1 2 3 4 5 KM.
0 1 2 3 MILES

DATE : MAY 15, 1975

WASTE DISPOSAL SITES

Map No 6